

195-25.

EXTINGUISHING
OIL AND
OTHER FIRES

The
Foamite
Firefoam
Method

Telephone :
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(2 lines)

FOAMITE FIREFOAM LTD., 24-26 MADDOX STREET
LONDON, W.1

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"Foamite, Wesdo,
London"

20. 10. 1958

21. 10. 1958

22. 10. 1958

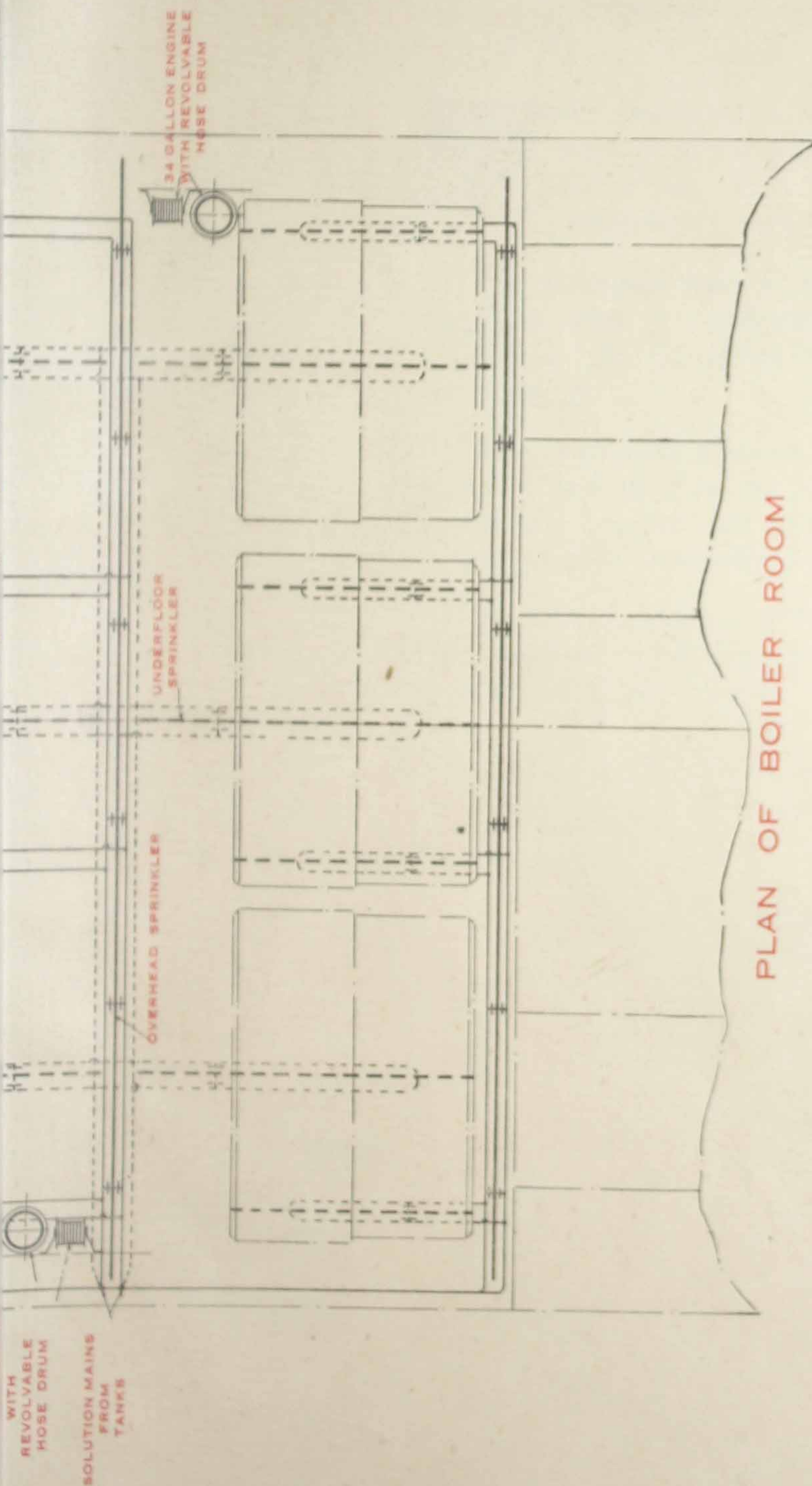
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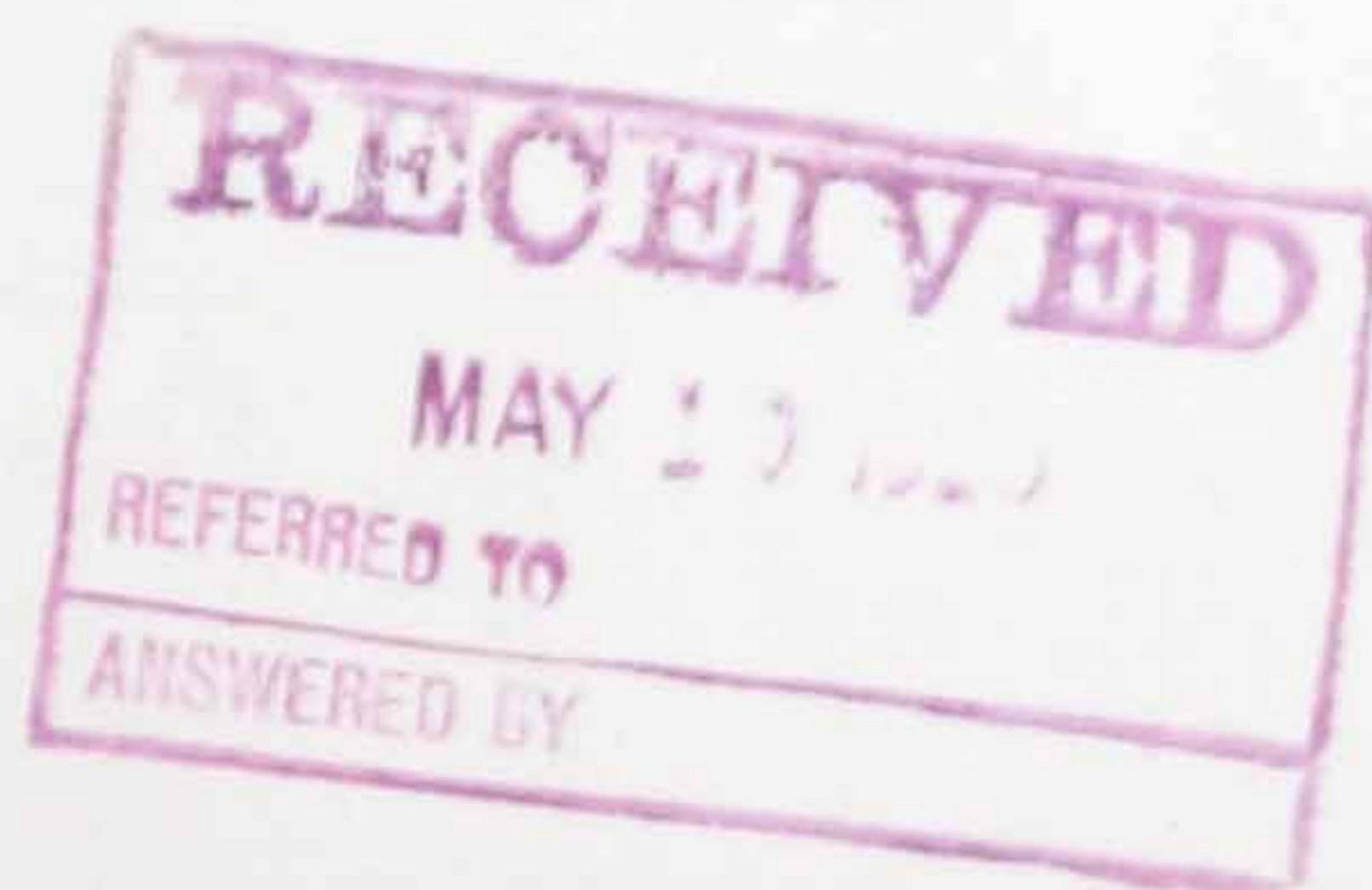
THIS brochure is written as an introduction to the Foamite method of fire protection. It is not intended to deal exhaustively with the subject.

The Company have a staff of fully qualified engineers who are prepared to advise on all matters of Fire Protection without obligation to the enquirer.

The minimum efficient protection is recommended, and this, in conjunction with a long experience, ensures that prices are as low as is consistent with reasonable protection.

No matter whether your risk calls for only one 2-gallon Extinguisher or a large installation, your enquiries are invited.

**ALL APPLIANCES ARE OF
BRITISH MANUFACTURE**



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What Foamite is

FOAMITE FIREFOAM is the original and justly celebrated Foam method of dealing with fires occurring in substances known to be of a dangerously inflammable nature, such as benzine, alcohol, celluloid, etc.

Invented and patented many years ago, the efficacy of Firefoam became fully established almost immediately after its inception. It was first adopted by large Oil Companies, who had such faith in its fire-extinguishing properties that they equipped large oil-tank farms and refineries with Foamite installations capable of producing vast quantities of Firefoam.

There is ample evidence to prove that such confidence has never been misplaced ; huge conflagrations resulting from the ignition of the petrol in 8,000-ton tanks, *i.e.*, tanks of 115 ft. diameter, have been extinguished by Firefoam.

**TO-DAY, OVER 25,000 OIL-TANKS OF ALL SIZES, AND
NUMEROUS REFINERIES, HAVE FOAMITE PROTECTION.**

The system soon attracted the attention of important ship-owners, who quickly perceived the advantage of the protection it afforded for oil-burning and motor vessels.

**NEARLY 3
TO-DAY, ~~OVER~~ A MILLION TONS OF BRITISH SHIP-
PING ARE PROTECTED BY FOAMITE INSTALLATIONS.**

In addition to Installations, the Company manufactures small engines and extinguishers of various capacity for those who have equally hazardous though smaller risks.

**TO-DAY, THESE EXTINGUISHERS ARE BEING
SUPPLIED IN THOUSANDS TO ALL PARTS OF THE
WORLD.**

Firefoam does no damage to materials

How it Works

FIREFOAM extinguishes a fire by blanketing it with a fire smothering foam, which is tough enough to resist the heat of the fiercest fire. The foam is produced by the reaction between two solutions—an acid known as Firefoam Solution “A,” and an alkali mixed with a special foaming ingredient (see page 4) known as Firefoam Solution “B.” These two solutions are kept apart until required for use, when they are brought into contact, with the result that Firefoam is produced and ejected by suitable means on to the fire.

A feature of this mixing is that the solutions expand into about 8/10 times their combined volume; e.g., one gallon of “A” Solution and one gallon of “B” solution will produce 16 to 20 gallons of Firefoam.

In the portable appliances the solutions are kept apart in the manner shown in Fig. 1. The inner chamber of the container has holes at the top above the solution level. When the extinguisher is inverted, the two solutions mix and the expansion gives the pressure which ejects the foam. In the case of the 2-gallon extinguisher the throw is about 25 ft., while the 34-gallon engine gives a throw of about 60 ft.

In larger engines and systems, the solutions are either pumped or forced by compressed air through twin separate pipes or hoses connected at their outer end to a single foam mixing and discharge device. One of the many devices used is illustrated in Fig. 2. Perforated pipe sprayers, etc., are also frequently used.

In certain instances it is possible to arrange for the solutions to flow by gravity.

“Firefoam will put out any fire that can be dealt with by other forms of chemical extinguishers, and will also completely smother burning oils, spirits and other highly inflammable material which they cannot extinguish.”

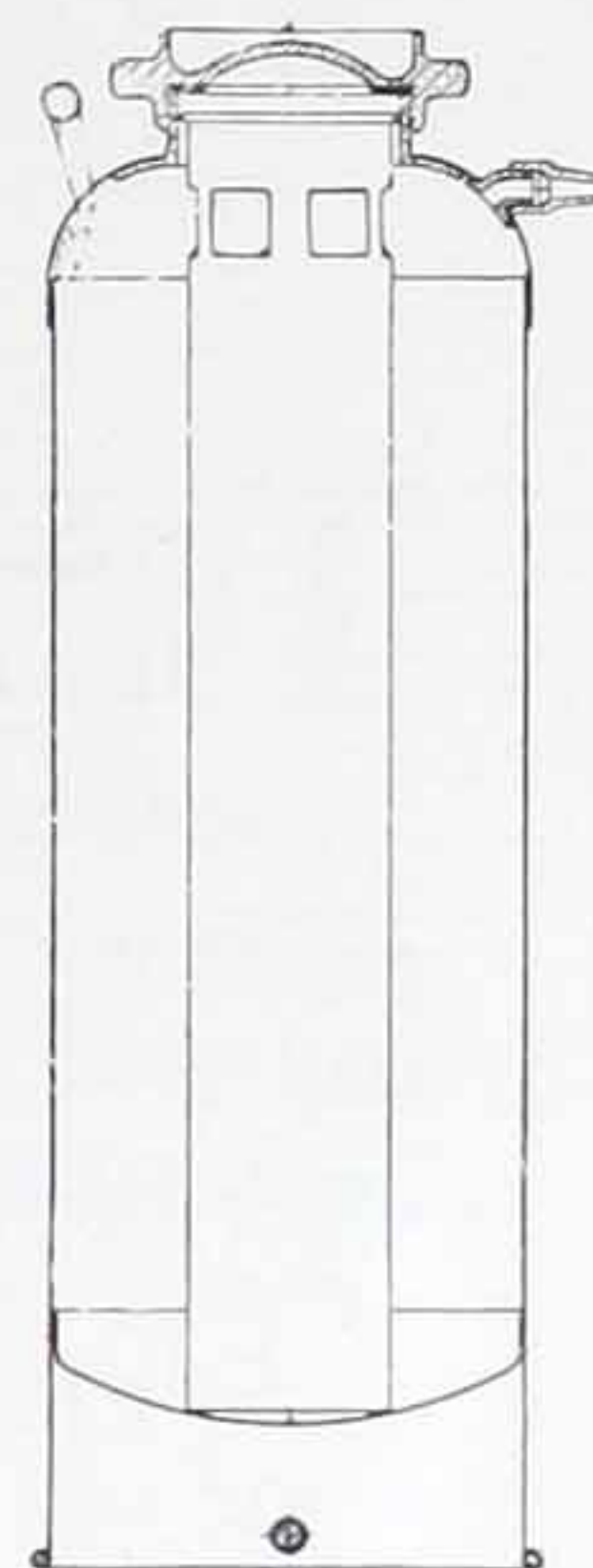


Fig. 1

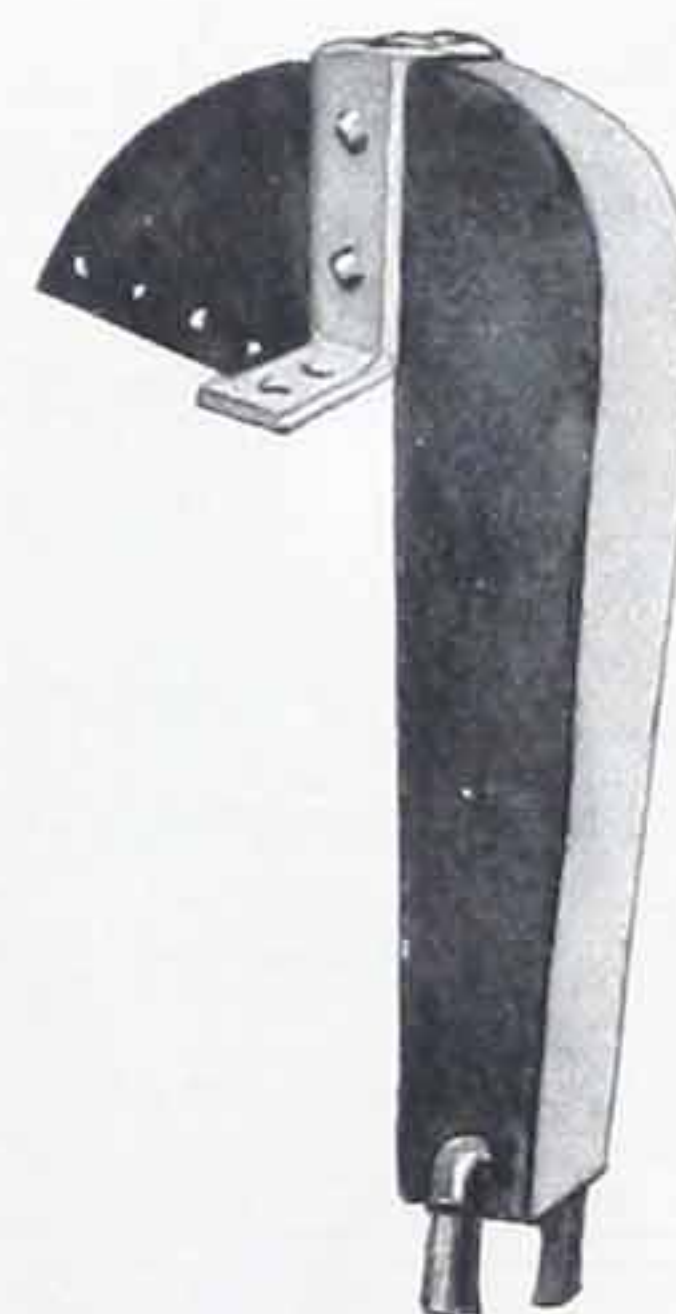


Fig. 2

Firefoam gives off no noxious fumes

Firefoam Liquid

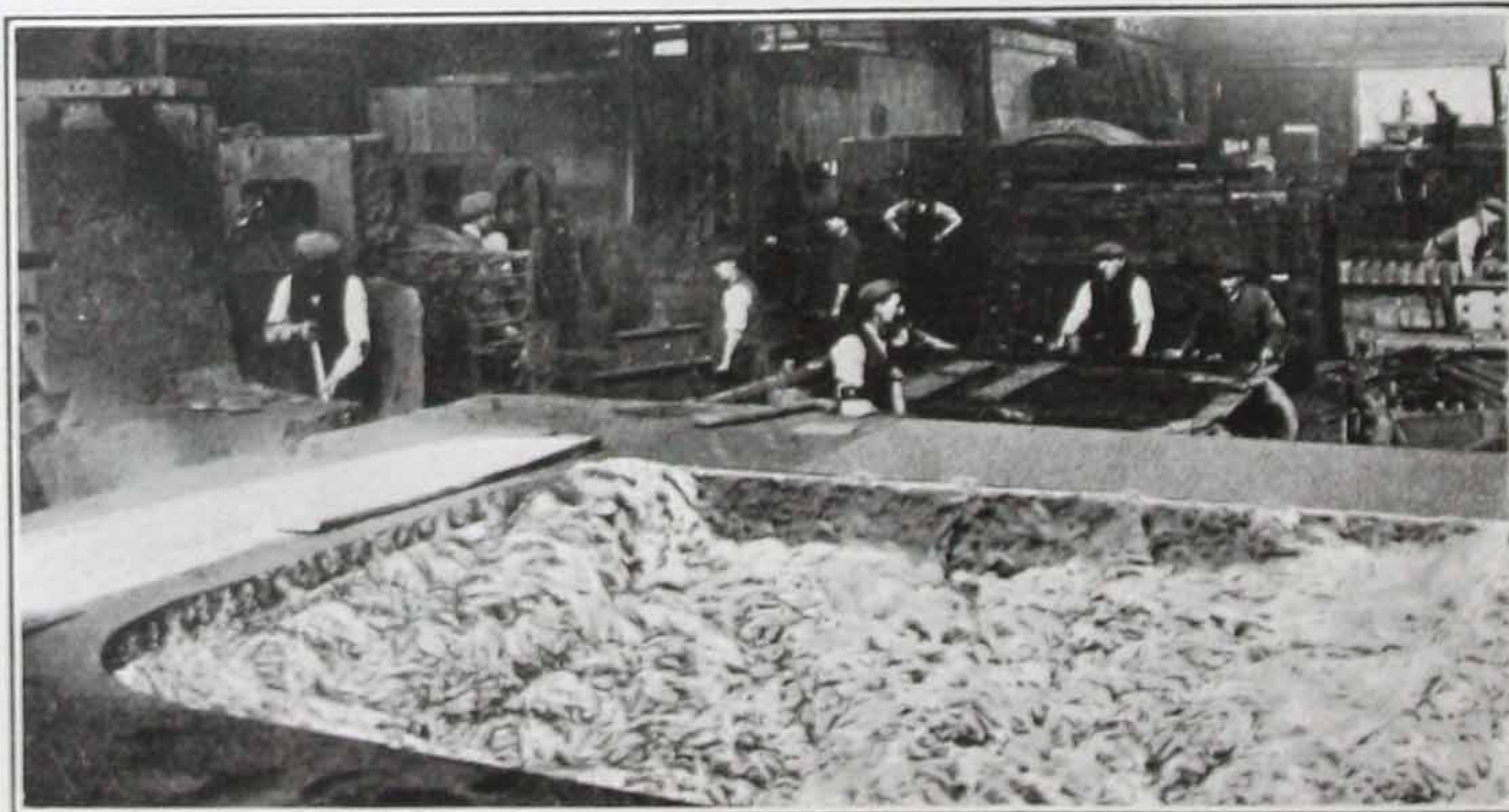
THIS liquid is the "key" to the success of the Foamite method. It is sometimes described as a "foaming medium" or "stabilizer."

The first requisite of the foaming medium is that it shall produce a good stiff, durable, fire-extinguishing foam, and the second that it shall not decay, decompose or deteriorate from age or any other causes.

Unless the foam formed by the foaming medium is stiff and durable it will not persist, resist high temperatures, or withstand rough usage, such as dropping on to the fire from a height. If it does not possess these qualities, a foam is of little or no value.

Decomposition of the foaming medium is a much more serious matter, for the solutions may have to remain stored for long periods, and should the foaming ingredient deteriorate, the entire installation might prove valueless when the crisis arises.

Firefoam Liquid, which can only be obtained from this Company, has been proved during a number of years to possess all the necessary qualities in a high degree. Many experiments with saponin, glucose, glue, soap, etc., have been made, but all these have been found to be lacking in at least one essential quality.



Foamite Appliances for Office, Garage and Home

Foamite Firefoam Portable Appliances

THE following pages illustrate and describe the various Foamite portable appliances, and it may not be out of place to mention that all equipment marketed by Foamite Firefoam Limited is made in Great Britain. The Engines and Extinguishers are manufactured in accordance with recognised engineering standards. Only the best materials and workmanship are used.

Every piece of apparatus is tested by expert engineers and all articles not up to standard are rejected. Our appliances have the reputation of being the "best made in the Kingdom."



A few of the Foamite Extinguishers made for H.M. Office of Works

"The efficiency of foam or froth as an extinguisher of oil fires is established, and experience with its use confirms the strong recommendation of the Advisory Committee . . ."

Extract Circular 1647, Board of Trade.

Testimonials free on request

2-Gallon Standard & Marine Type Extinguishers



Standard Type



Marine Type

Firefoam adheres to vertical surfaces

THESE appliances produce sixteen gallons of Firefoam and can be operated at a distance of 25 ft. from the fire. To operate, they are turned upside down. The foam-stream is easily directed on to the burning surface, but, in the case of inflammable liquids, should be allowed to fall as lightly as possible. As soon as the flames at one point are extinguished, the jet should be played upon that part which is still burning.

Small wall-brackets are free with each machine but, if desired, special box-brackets can be supplied. These are designed so that the Extinguisher stands upon the lid of the box, which is made to contain two charges.

A special quick-acting valve cap (see illustration) is fitted when the Extinguisher is to be subjected to jolting, *e.g.*, if carried on a lorry or motor-boat. This ensures that the inner chamber is tightly sealed so that the two solutions cannot mix prematurely. One part-turn to the left releases the valve.

THE STANDARD TYPE EXTINGUISHER is approved by the Fire Offices' Committee for fires of every description.

THE MARINE TYPE EXTINGUISHER is approved by the Board of Trade and is already used by the leading shipowners. Not only is it suitable for use in boiler-rooms but for passenger accommodation also, especially as Firefoam does no damage to materials or decorative work. Water damage, too, is eliminated.

		Diameter	Height	Wt. Empty	Wt. Charged
Standard	7½ ins.	22½ ins.	17¼ lbs.	37¼ lbs.
Marine	7½ ins.	22½ ins.	18 lbs.	38 lbs.

The additional weight in the Marine Type is accounted for by the reinforcing collar (seen in illustration just below cap) which is necessary in order to comply with the regulations of the Board of Trade.



Special Cap

Firefoam Solutions do not deteriorate

10-Gallon Foamite Engine



THIS engine produces 80 gallons of Firefoam and can be operated at a distance of 40 ft. from the fire. It is fitted with 12 ft. of rubber hose and the foam stream can be controlled by the cock at the nozzle. The appliance can be taken up steps with ease.

When required for use on board ship, a band around the centre, carrying trunnions, is usually substituted for the wheels.

A screw valve in centre of the cap seals the inner chamber until the machine is required for use.

Weight, empty 140 lbs. Weight, charged 240 lbs.
Over-all dimensions 3 ft. 3 ins. (height) × 1 ft. 7 ins. × 1 ft. 8 ins.

The Firefoam Jet is non-conductive

34-Gallon (Model "F") Engine



THIS engine, which produces 272 gallons of Firefoam, is built for indoor use and can be easily taken through doorways. A jet 50 ft. to 60 ft. in length is obtained when the appliance is put into operation, but the foam stream can be temporarily turned off by means of the cock at the nozzle.

Weight, empty 400 lbs. Weight, charged 740 lbs.

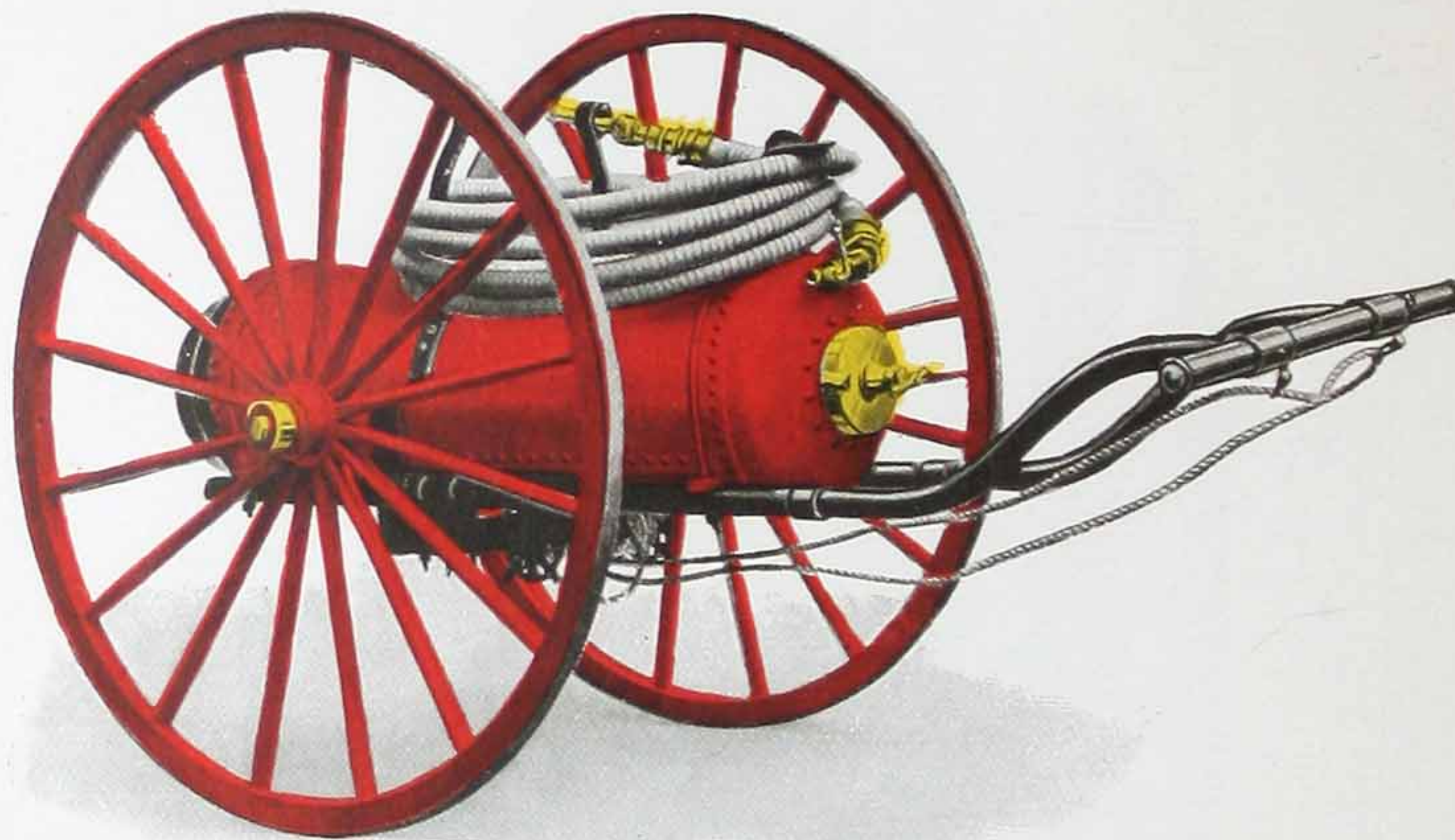
Handle to base of cylinder 5 ft. 1 in.

Clearance 3 ft.

Diameter of wheels 4 ft. 2 ins.

Foamite Appliances are simple in operation

34-Gallon (Model "D") Engine



THE capacity of this engine is the same as that of the Model "F," but it is built for outdoor use and can be taken with ease over rough ground as the wheels are set wide apart. To facilitate this it is also fitted with long handles and drag-rope.

Both types of 34-gallon engine are fitted with 30 ft. of special chemical rubber hose, and it will be noticed that in each case there is a screw valve in the centre of the cap which ensures that the inner chamber may be kept securely closed so that the two solutions will not mix until desired, no matter what position the engine is in.

Weight, empty 500 lbs. Weight, charged 840 lbs.

Handle to base of cylinder 7 ft. 3 ins.

Clearance 4 ft.

Diameter of wheels 4 ft. 2 ins.

Firefoam is effective upon all fires



Foamite Fire Pail

Sixteen gallons of Firefoam are produced by this appliance which is recommended for use upon incipient fires of all classes. It is approved by the Fire Offices' Committee and is especially recommended in lieu of water buckets for those risks where inflammable liquids are stored or used.

Top diameter	14½ ins.
Height	13 ins.
Weight, empty	9¾ lbs.
Weight, charged	29¾ lbs.



1-Gallon Fire Extinguisher

This appliance is designed for carriage upon lorries or motor boats and is therefore fitted with the special valve cap. It is sometimes supplied for use in private houses and offices, however, and in such cases the special anti-splash device is not required.

Diameter	7½ ins.
Height (including special cap)	17 ins.
Weight, empty	16 lbs.
Weight, charged	26 lbs.

The 1-gallon Foamite Extinguisher is approved by the Board of Trade.

Firefoam does not damage machinery

The "Firespite" (C.T.C.) Extinguisher

is designed for carriage upon motor-cars where space and weight are important factors.

Capacity	1 quart
Length, including bracket	15½ ins.
Width.. .. .	3 ins.
Weight, charged (including bracket) .. .	9 lbs.

This appliance is approved by the Fire Offices' Committee and by the Board of Trade.



The "Firespray" (SODA ACID) Extinguisher

is approved by the Fire Offices' Committee and the Board of Trade. It is particularly effective upon free-burning materials but should not be used upon fires involving inflammable liquids.

Capacity	2 gals.
Height to top of plunger	24 ins.
Diameter	7½ ins.
Weight, empty	14 lbs.
Weight, charged	34 lbs.



The above appliances do not produce Firefoam

Quotations given for all Fire Service Equipment

Foamite Marine Installations

THE frontispiece gives a diagram of a typical Foamite gravity type marine installation for protecting an oil-burning boiler-room or motor-room.

The two solutions are stored in tanks placed at a suitable height above the boiler-room so as to allow for the proper flow of the solutions by gravity. From the tanks, twin pipes are led to suitable Foamite sprayers or discharge devices, fitted so as to protect areas where oil fires might occur. In oil-burning boiler-rooms, these sprayers are often fitted both below and above the floor plates so that fires may be extinguished on the tank top and bilges; or upper surface of floor plates, boiler fronts and bulkheads.

For safety, the control valves are conveniently situated outside the fire danger zone. In the event of fire, the valves are simultaneously opened when the two solutions flow, at the same rate, to the Foamite sprayers, and the Firefoam is discharged over the burning area.

Where it is not possible for the solutions to flow by gravity, the installation is operated by compressed air, or pumps.

A description of the Foamite 34-gallon marine type engines fitted with hose, and operated by steam or compressed air, will be found on pages 15 and 16. For smaller marine appliances, see pages 6, 8, and 11. The 2-gallon extinguisher, illustrated on page 6, affords excellent protection for passenger accommodation, crews' quarters, stores, etc. Many important lines use these appliances exclusively.

The Foamite marine installation is fully approved by the Board of Trade.

Firefoam protects over 1,500,000 tons of shipping

A FEW OF THE Vessels equipped with FOAMITE Installations

ANGLO-SAXON PETROLEUM CO., LTD.

Carlota
Casandra
Chepita
Conchita
Hera
Julieta
Justina
Lara
Manuela
Marsella
Martina

ATLANTIC TRANSPORT CO., LTD.

Minnetonka
Minnewaska

AUSTRALIAN COMMONWEALTH LINE OF STEAMERS

Esperance Bay
Hobson's Bay
Jervis Bay
Largs Bay
Moreton Bay

BELFAST STEAMSHIP CO., LTD.

Classic
Graphic
Heroic
Patriotic

BRITISH INDIA LINE

Chilka
Domala
Dumana
Madura
Malda
Manela
Mantola
Mashobra
Masula
Matiana
Modasa
Mulbera
Tairea
Takliwa
Talamba

CANADIAN PACIFIC STEAMSHIPS, LTD.

Empress of Australia
Empress of Canada
Empress of France
Empress of Scotland
Montcalm
Montclare
Montrose
Montroyal

COMPAGNIE GENERALE TRANSATLANTIQUE

De Grasse

COMPANIA SUD AMERICANA DE VAPORES

Aconcagua
Teno

CUNARD STEAMSHIP CO., LTD.

Alaunia
Albania

Andania
Antonia
Ascania
Aquitania
Ausonia
Berengaria
Caronia
Carmania
Franconia
Laconia
Mauretania
Samaria
Scythia

ELDER DEMPSTER & CO., LTD.

Aba
Adda
Ediba

ELLERMAN LINES, LTD.

City of Baroda
City of Nagpur
City of Paris
City of Simla

FEDERAL STEAM NAVIGATION CO., LTD.

Cambridge
Cumberland
Hertford
Huntingdon
Kent
Middlesex
Norfolk
Somerset
Surrey

GENERAL STEAM NAVIGATION CO., LTD.

Crested Eagle

HOLLAND—AMERICA LINE

Veendam
Volendam

ALFRED HOLT & CO.

Hector
Polydorus

ISLE OF MAN STEAM PACKET CO., LTD.

Caesarea
Manxman

NEW ZEALAND SHIPPING CO., LTD.

Remuera
Rotorua
Ruahine
Tekoa

ORIENT LINE

Orama
Ormonde
Oronsay
Otranto

PACIFIC STEAM NAVIGATION CO.

Laguna
Orcoma
Orita
Oropesa
Oroya

P. & O. LINE

Cathay
Chitral
Comorin
Maloja
Moldavia
Mongolia
Mooltan
Ranchi
Ranpura
Rasmak

RED STAR LINE

Belgenland
Zeeland

ROYAL MAIL STEAM PACKET CO.

Alcantara
Almanzora
Arcadian
Arlanza
Asturias
Montgomeryshire

SOUTHERN RAILWAY

Isle of Thanet
Maid of Kent

UNION CASTLE MAIL STEAMSHIP CO. LTD.

Carnarvon Castle
Sandgate Castle
Sandown Castle

UNION STEAMSHIP CO., OF NEW ZEALAND, LTD.

Aorangi
Otokia

UNITED AMERICAN LINES

Cleveland

UNITED STATES SHIPPING BOARD

Leviathan

WEIR & CO., ANDREW

Alynbank
Birchbank
Cedarbank
Clydebank
Comliebank
Elmbank
Forresbank
Glenbank
Gujarat
Inverbank
Kathiawar
Larchbank
Levernbank
Luxmi
Myrtlebank
Nairnbank
Olivebank
Weirbank

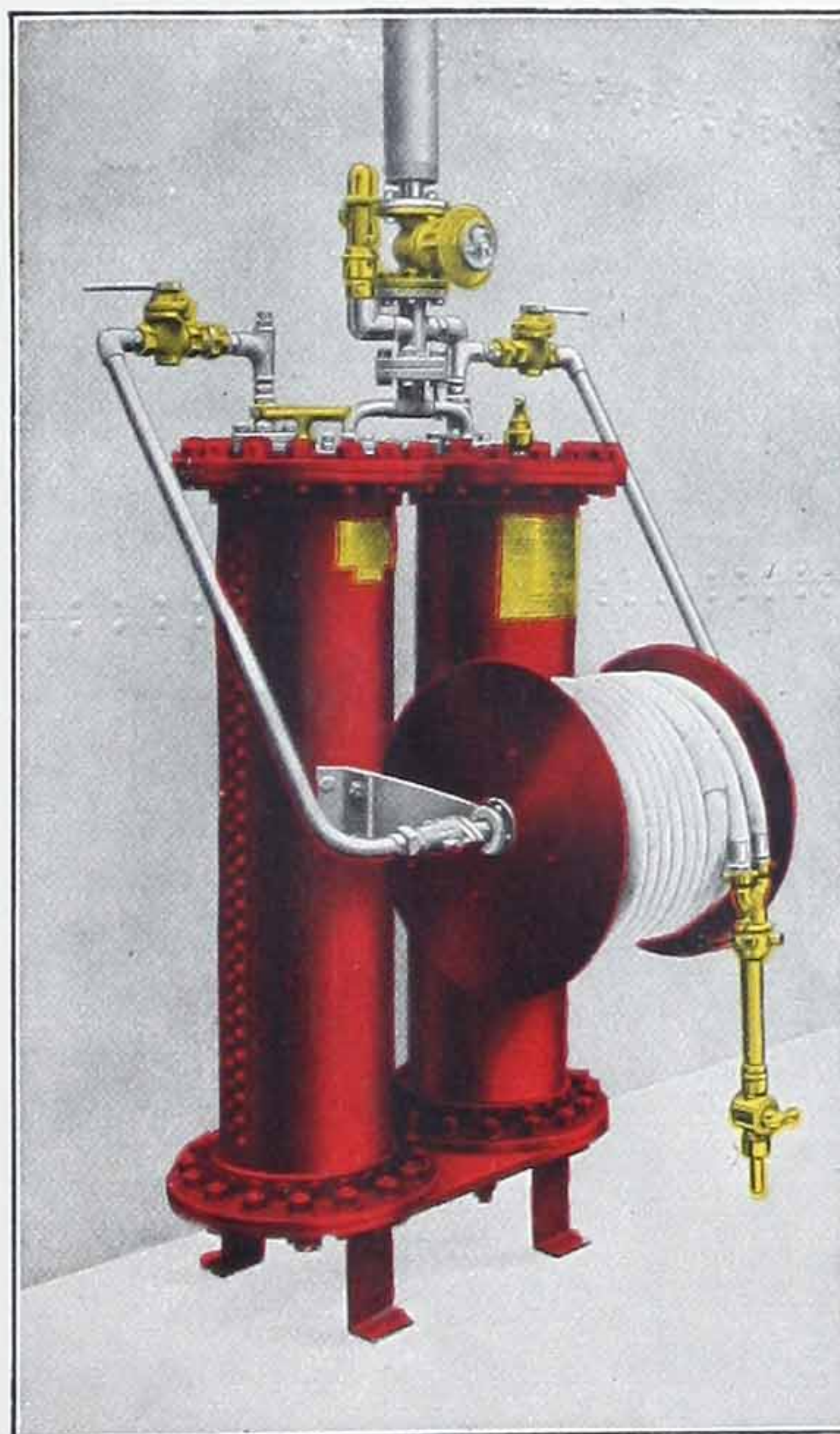
WHITE STAR LINE

Homeric
Majestic
Olympic
Pittsburg

The eight largest Liners afloat are

Foamite Marine 34-Gallon Engine

THE illustrations on this and the next page are those of the B.O.T. approved 34-gallon Foamite Hose Engines of approximately 300-gallons foam capacity. These engines serve as auxiliaries to the larger marine system, or, in the smaller vessels, are installed in



Double Cylinder Engine

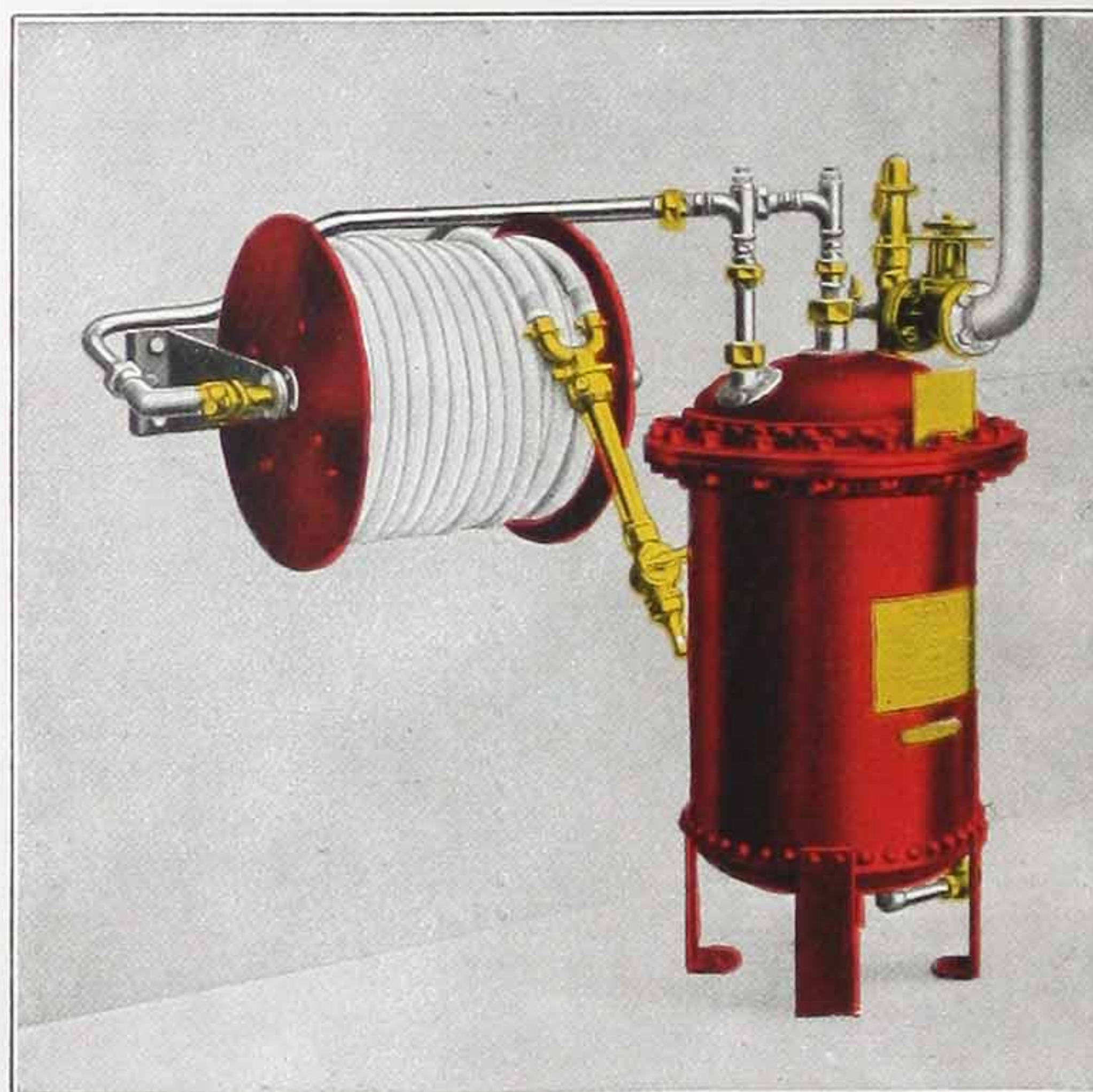
place thereof. They form excellent local fire protection for Diesel Engine Rooms.

Where space has to be economised, the single-tank type of engine is recommended, but the double-tank type, whilst occupying a very little extra space, permits of easier inspection.

equipped with complete Foamite systems

Each engine is supplied with a revolvable hose-drum, usually mounted with about 75 ft. of twin hose fitted with branch pipe and nozzle ; a chemical charge, 8-gallon dissolving vessel, filling-funnel, and detailed instructions and illustrations are also supplied. These engines can always be despatched from stock.

Engines of 80-gallons (640-gallons foam capacity), of similar design, are also made.



Single Cylinder Engine

A Foamite installation must not be considered merely as a collection of pumps, tanks, chemicals and pipe lines, but as a single unit, its efficiency depending on every feature being so co-related that all parts shall function properly. To secure this co-relation is an engineering problem requiring expert knowledge and experience. Every feature of Foamite Firefoam apparatus has been carefully designed to give the desired result.

Firefoam withstands the most intense heat

Foamite Harbour Engine

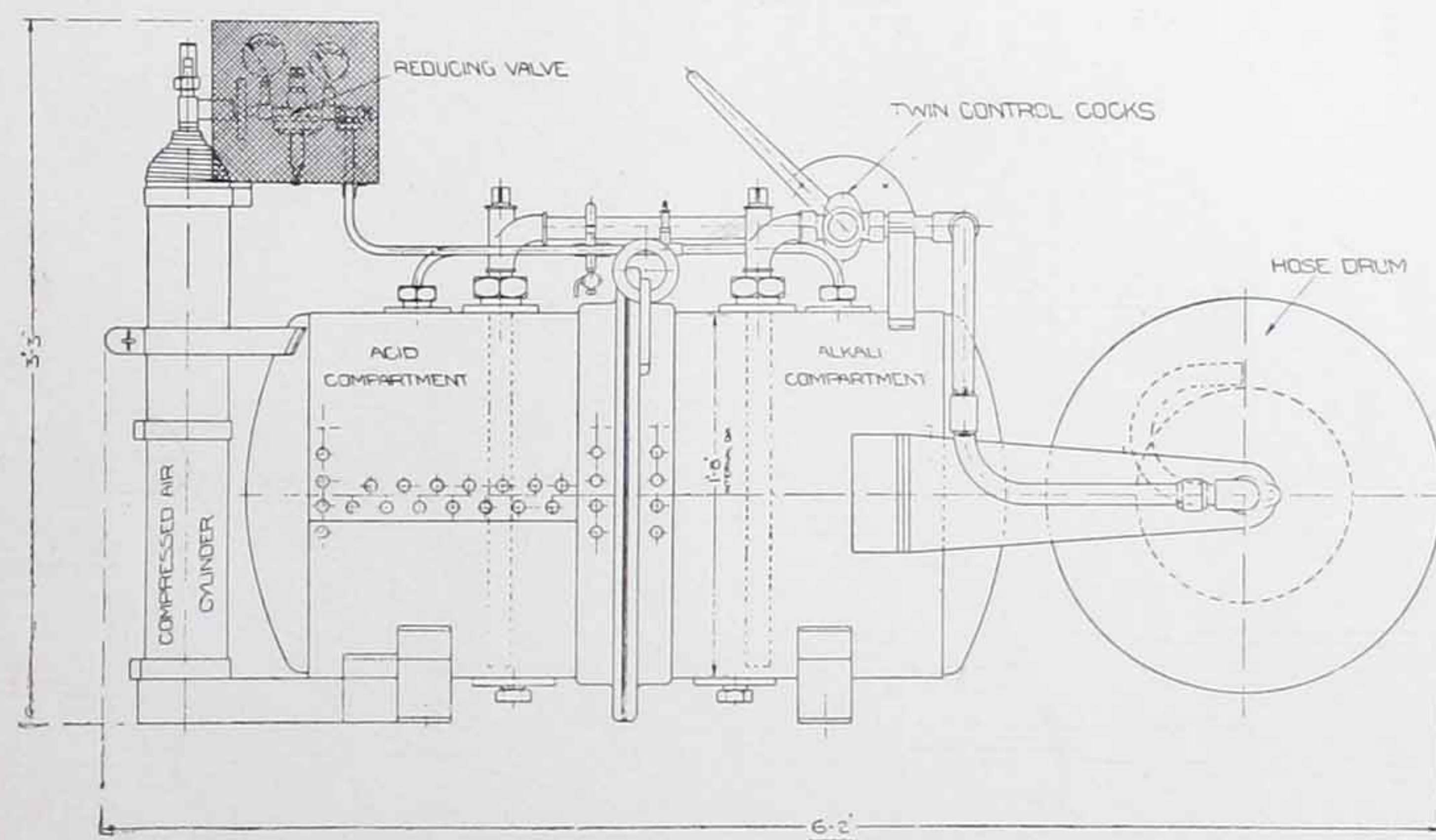
IN docks and harbours, fires are often caused by the ignition of floating oil, discharged from oil-burning or oil-carrying vessels.

Fires often break out, also, in the boiler rooms of oil-burning ships lying in docks or alongside wharves, not only threatening the destruction of such vessels, but endangering neighbouring shipping and property.

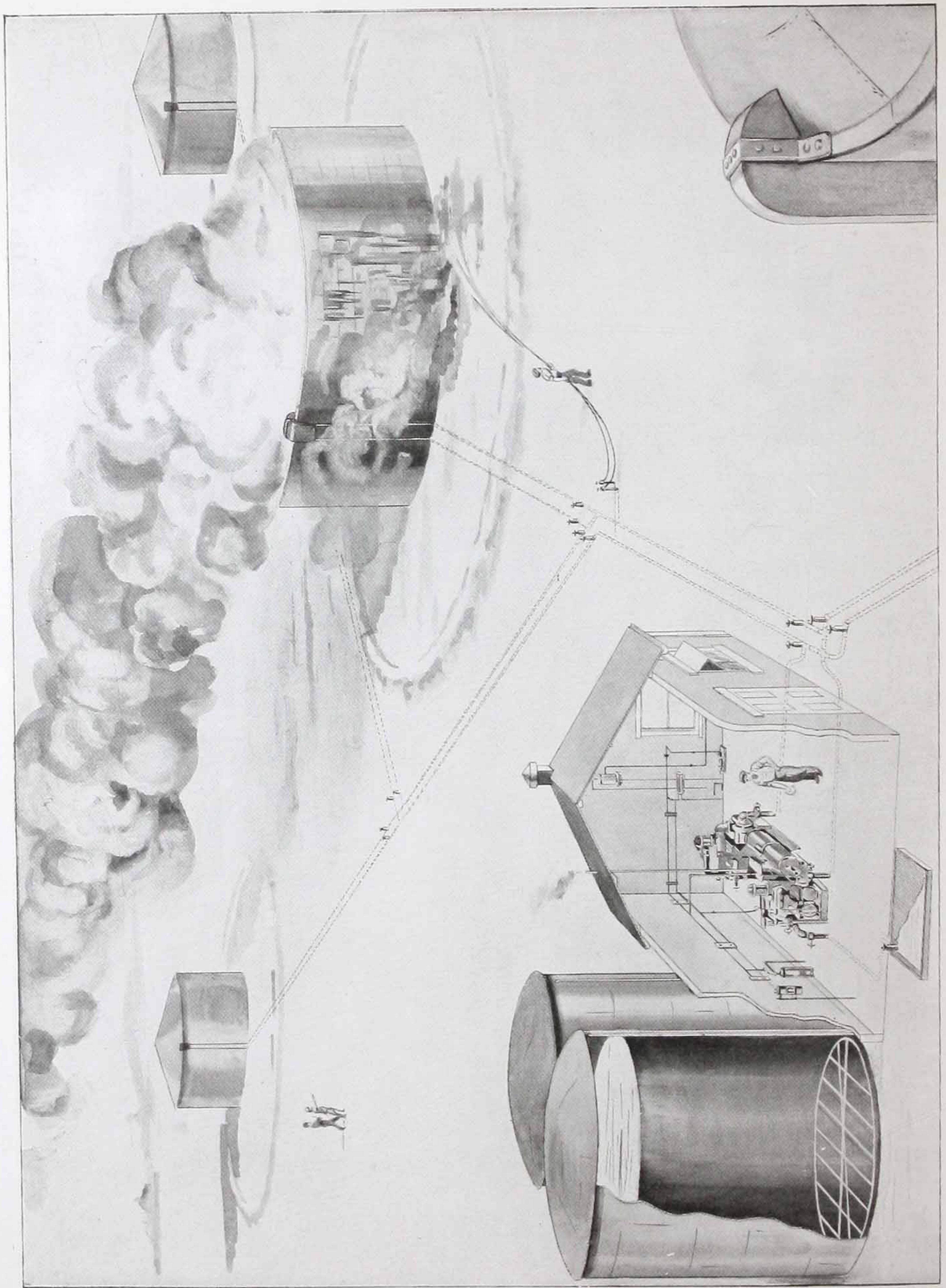
Many of the most important Port Authorities, including those of Belfast, Tyne, Tees, Sydney (N.S.W.), Wellington (N.Z.), etc., have Harbour Type Foamite Engines. These may be either permanently fitted to Fire-floats, when they are particularly useful for extinguishing oil fires on the surface of water, or they may be carried in boats to a vessel whose boiler-room is on fire, and hoisted on deck for the better convenience of directing the foam jet into the space affected.

The illustration shows one of these engines. The two solutions are expelled by compressed air stored in a steel bottle fitted to one end of the engine. The total weight, when appliance is charged, is approximately 1,000 lbs.

Harbour Engines of 80 gallons capacity (foam capacity 640 gallons), of similar design, can be supplied if desired.



Firefoam floats on any liquid



Foamite Land Installations

THE illustration opposite shows a typical Foamite installation for protecting oil tanks and refineries.

There are two equal sized solution storage tanks, one (lead lined) holding the acid, the other the alkali solution, these tanks being connected by suction pipes, at their lower ends, to a twin duplex pump, steam or power driven and usually of the reciprocating type, although there are cases where positive acting rotary pumps are used.

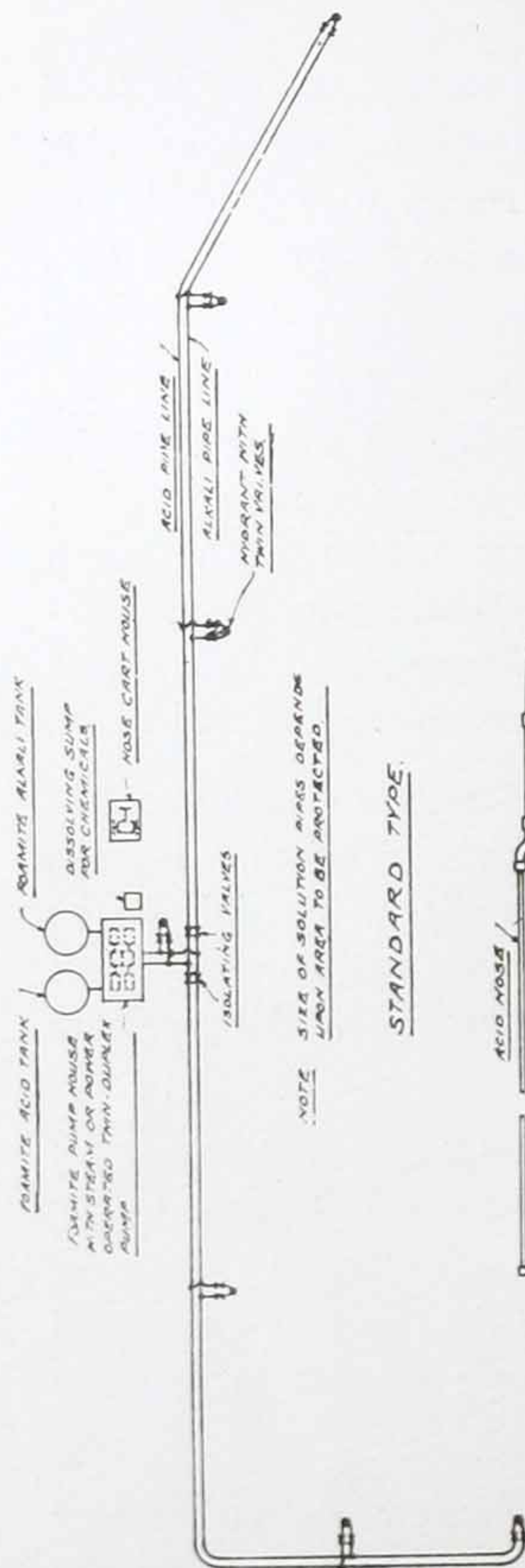
The Foamite pump is put in a suitable house, in which are also fitted, when they are required, the air compressor for stirring the solutions, and a heater for maintaining the solutions at an efficient temperature in cold weather. The discharge orifices of the pump are connected to twin out-going field pipes leading to the mixing-chambers on the oil tanks and to Foamite hydrants situated at suitable points. Control valves are fitted at safe distances from the oil-tanks.

It will be understood that the pipes carrying the two solutions are led separately to the mixing-chambers at the tops of the oil-tanks with the object of the foam being formed as near as possible to the seat of the fire. Similarly, the hose fitted to the hydrants consist of twin lines breeched into a mixing tube (see page 21). All pipes are empty until the system is operated.

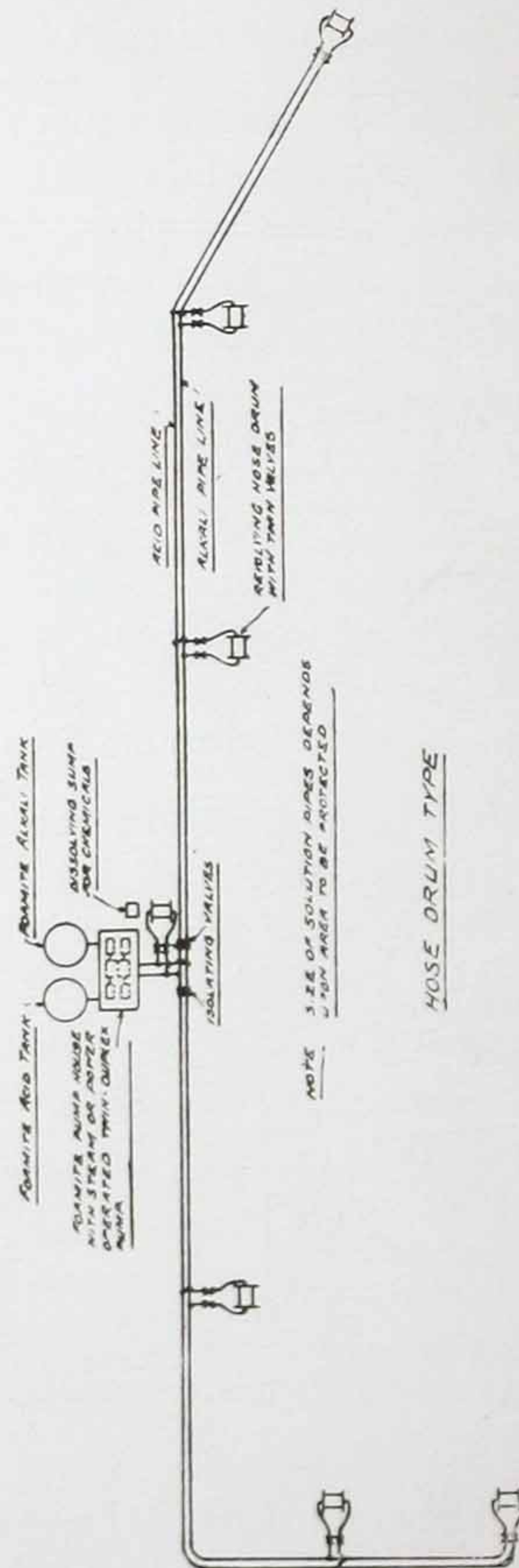
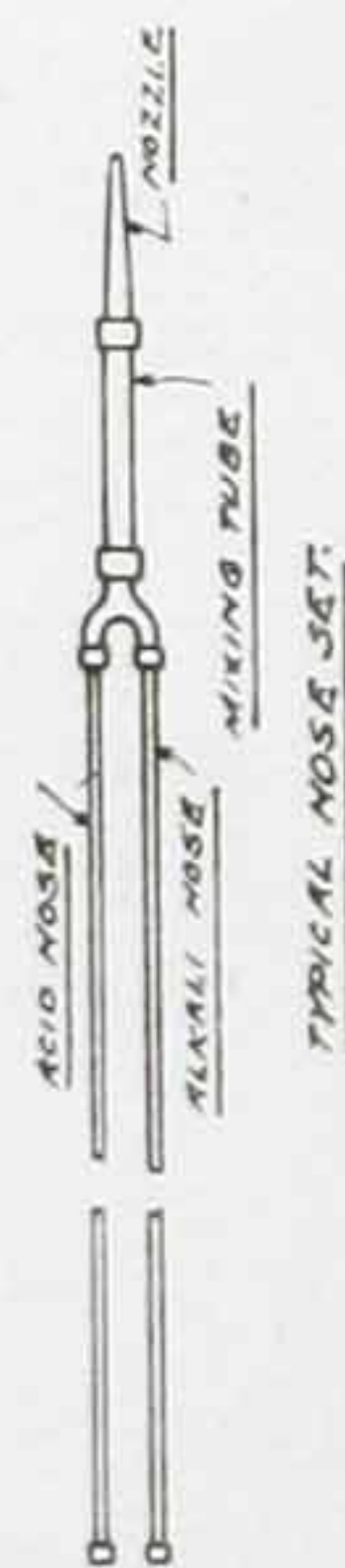
It has already been mentioned that, in addition to the standard design of mixing-chambers for oil-tanks and Foamite hose hydrants, special foam discharge devices are provided according to the nature of the risk. These special devices may be in the nature of perforated pipes, or spray heads, automatic operation being arranged for in some instances.

Although a twin duplex pump, worked by steam or electric motor or oil engine, is generally used to withdraw the solutions from the tanks, it is necessary in some cases to arrange for the solutions to be expelled by means of compressed air or gravity.

Over 25,000 Oil Tanks have Foamite protection



STANDARD TYPE



HOSE DRUM TYPE

DIAGRAMMATIC SKETCH OF
FOAMITE HYDRANT SYSTEMS

FOAMITE SYSTEMS LTD.
25-27 MADON STREET, LONDON

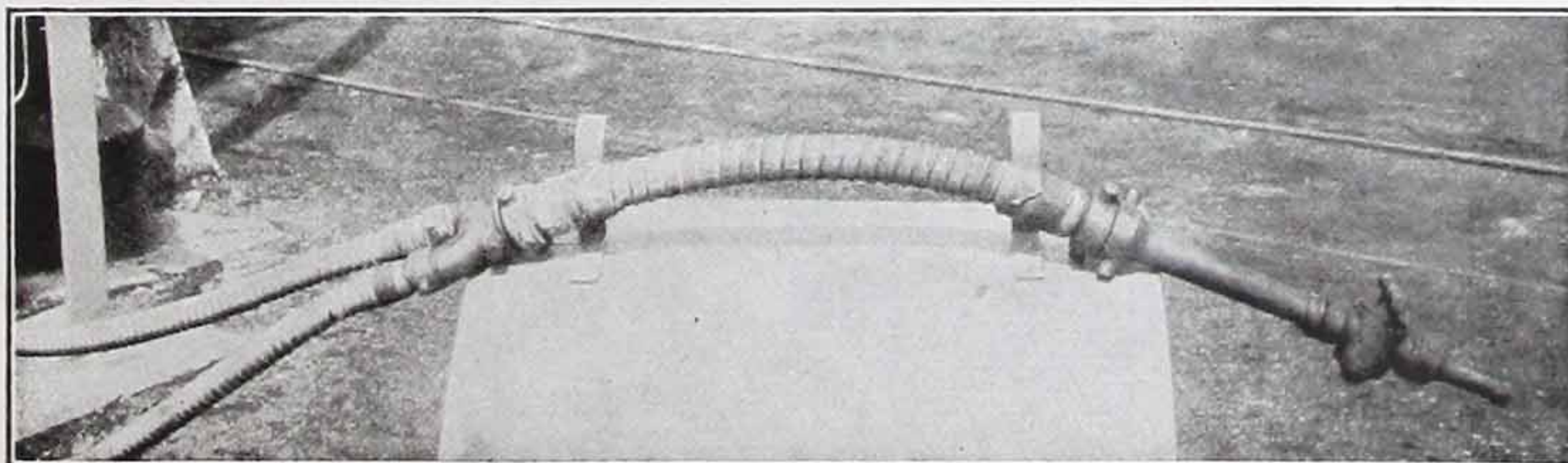
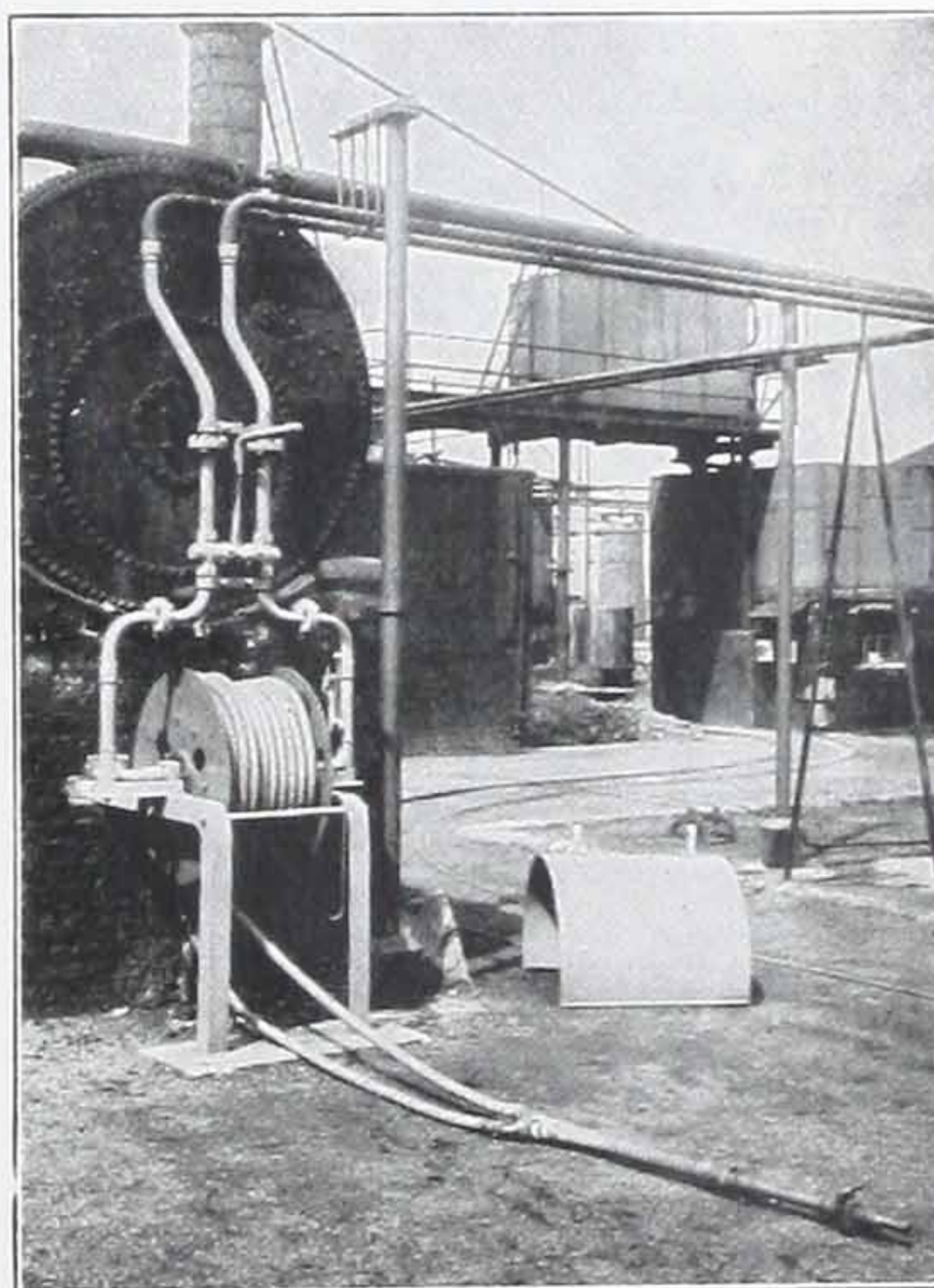
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Foamite Firefoam Hydrant Installations

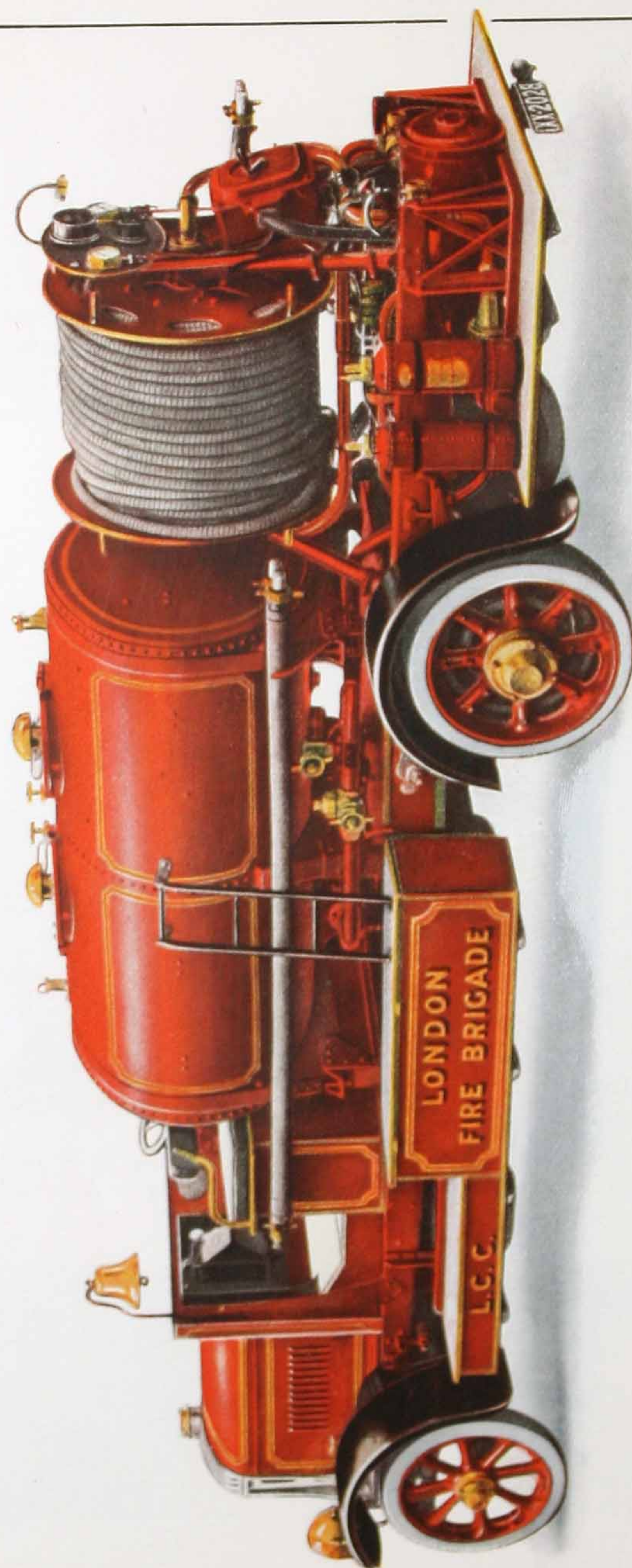
THE need for something between the Foamite Firefoam portable appliance and the complete installation for the combating of fires in highly inflammable substances has resulted in a Foamite Hydrant installation being designed. This, while capable of dealing with quite large fires, is relatively inexpensive.

Hydrant installations naturally vary according to the area of the plant to be protected and its accessibility, but all are constructed on the same principle. They consist of two equal sized solution tanks, a Foamite twin duplex pump and hydrants so arranged that all parts of the fire risk, *i.e.*, all buildings, tanks, etc., where inflammable processes are carried out, can be covered with foam jets.

The diagram facing this page shows both a hydrant installation where the hose or hoses are housed until required, when they are coupled up to the "stand pipes," and also one where the hoses are permanently fixed to each distribution point, each hose having a fluid connection through the axle of the hose reel so that it is only necessary to run out as much hose as is required to reach the fire. (See illustration).



Firefoam makes a re-flash impossible



The 600-Gallon Foamite Motor Engine supplied to
The London Fire Brigade

600-Gallon Foamite Engine

CAPACITY :—300 imperial gallons each solution. Firefoam output, approximately 5,000 gallons.

NOZZLE OUTPUT :—Maximum capacity of each pump 40 g.p.m. Maximum Firefoam rate of delivery from nozzle, about 700 g.p.m. Length of jet, approximately 70 feet.

TANK :—M.S., elliptical, divided into halves by central diaphragm. Tank fitted with large manholes and solution level indicators.

PUMPS :—Positive acting rotary type driven through worm gearing by an electric motor. Pumps fitted below rear of chassis.

HOSE DRUM :—Revolvable, with hollow bearings connected to pump delivery pipes ; has 300 feet twin hose fitted with breeching piece, mixing tube and branch pipe with nozzle.

VALVES :—All necessary valves and cocks for main operation and for charging and washing out.

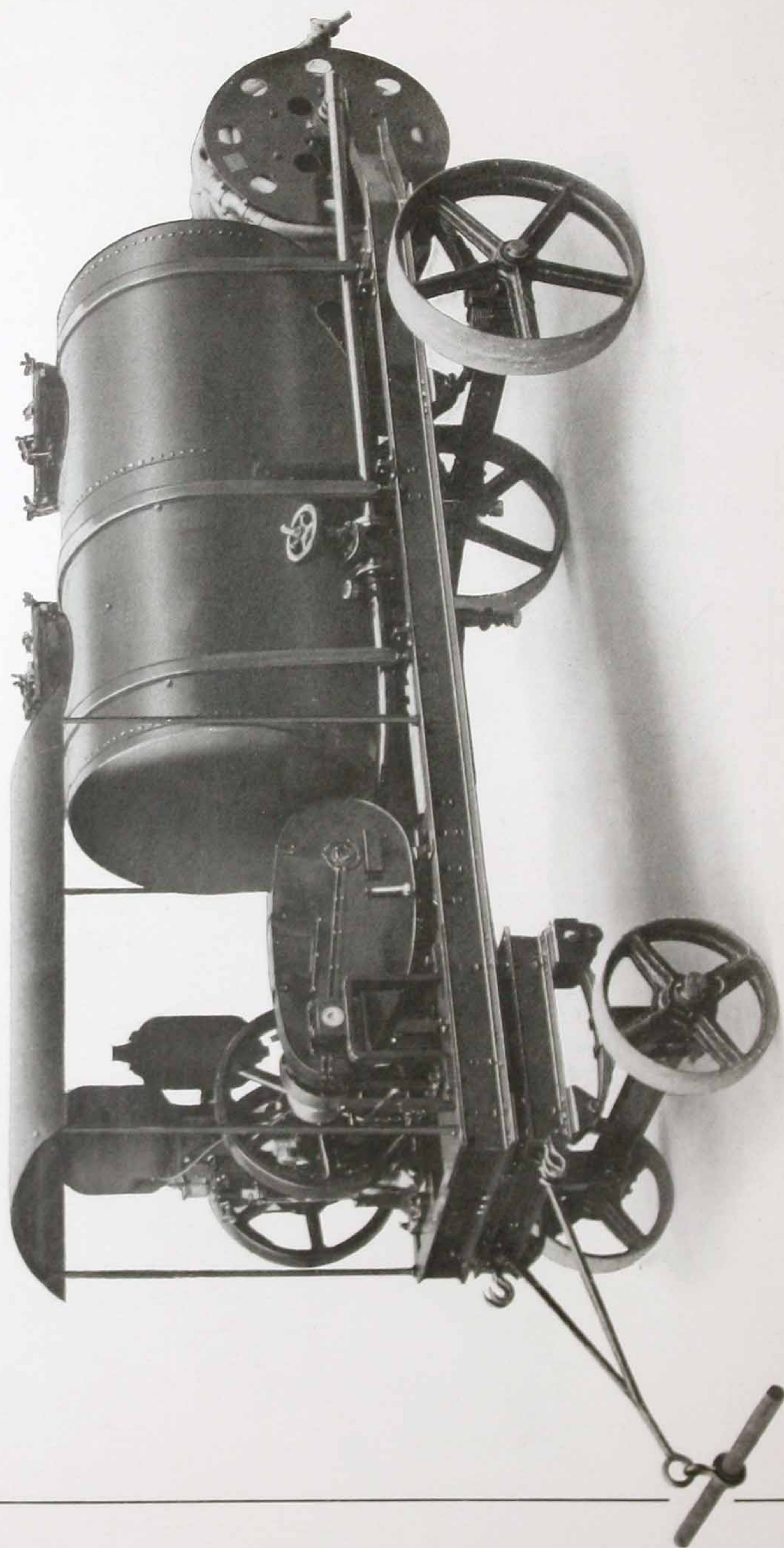
HAND EXTINGUISHERS :—Four 2-gallon Foamite hand extinguishers with special valve caps to prevent mixing of solutions through jolting.

CHASSIS :—The well-known Tilling-Stevens petrol-electric (or geared if preferred) chassis with 50-60 h.p. engine. Accessories include lighting set, usual tools and spare parts.

300-Gallon Foamite Engine

ENGINES of 300 gallons capacity (producing approximately 2,500 gallons of Firefoam) are also supplied fitted upon geared chassis or upon under carriage for draught purposes, as illustrated on the next page. Full specification of these units can be had upon application.

Motor Equipment of any capacity supplied



300-Gallon Foamite Engine

A FEW USERS OF FOAMITE APPLIANCES

GOVERNMENTS

British Admiralty
British Office of Works
British War Office
Chinese Maritime Customs
Dutch Government Mines
Dutch Government Railways
Dutch Navy
Greek Navy
Iraq Government
Italian Army
Italian Navy
Kenya Government
New South Wales Government
Queensland Government
South African Government
Spanish Army
Spanish Naval Air Force
United States Air Force
United States Army
United States Navy

OIL COMPANIES

Anglo-American Oil Co., Ltd.
Anglo-Mexican Petroleum Co., Ltd.
Anglo-Persian Oil Co., Ltd.
Anglo-Saxon Petroleum Co., Ltd.
Asiatic Petroleum Co., Ltd.
British Controlled Oilfields, Ltd.
British Imperial Oil Co., Ltd.
Burma Oil Co., Ltd.

London & Thames Haven Oil Wharves, Ltd.
Trinidad Central Oilfields, Ltd.
Vacuum Oil Co., Ltd.

SHIPOWNERS

Anchor Line, Ltd.
Atlantic Transport Co., Ltd.
British India Steam Navigation Co., Ltd.
Canadian Pacific Steamships Ltd.
Compagnie Generale Transatlantique
Cunard Steamship Co., Ltd.
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